Northwestern Pennsylvania Telemedicine Initiative
WC Docket No. 02-60
Rural Health Care Mechanism

Hamot Medical Center
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May 2, 2007

Hamot Medical Center is a 343-bed tertiary care center located in Erie, Pennsylvania. It is part of the Hamot Health Foundation, a healthcare delivery system that reaches out to greater than 1 million people in the northwestern Pennsylvania, western New York and eastern Ohio. Hamot Medical Center has been recognized as a Solucient 100 Top Hospital for Cardiovascular, Critical Care, Stroke and Superior Performance Overall; US News and World Report chose Hamot as one of the country's top 50 hospitals for Heart and Heart Surgery, Neurology, Orthopaedics, Urology and Geriatrics. Additionally, it has been ranked among the top 5 percent in the nation for cardiac care, cardiac surgery, stroke and gastrointestinal care by HealthGrades, also placing Hamot Medical Center among the top 10 percent in the nation for pulmonary and critical care.

Through a combined vision of Hamot Medical Center, Medicor Associates, Inc (cardiology), and Flagship CVTS (cardiothoracic surgery), the Hamot Heart Institute was established to coordinate and manage the delivery of cardiovascular care throughout the region. In keeping with the mission and vision for Hamot Medical Center, the goal of the Heart Institute was to be the premier provider of cardiovascular services for the region and a leader in heart care as identified by quality, value and service. For many years now, members of Medicor Associates, Inc, have been traveling to the rural areas of northwestern Pennsylvania and western New York to provide access to cardiology care. It is an opportunity for patients to be seen and treated locally. Depending on the location, cardiologists may travel once or twice per week to see patients in these rural clinics – some located as far as 140 miles from Erie. There is a need for additional days of operation; however, given an increased need in the Erie community for the physicians, limited manpower, and the distance/time element, Medicor Associates has only marginally been able to accommodate these requests.

A limited number of primary care physicians and specialty physicians, coupled with long distance travel, have made it difficult for individuals in the rural communities of northwestern Pennsylvania to receive specialty care. Access to care is further impaired due to inadequate transportation options for many residents and the treacherous winter weather. Through telemedicine Hamot Medical Center can not only deliver care to the rural areas that do not presently have access to specialty care but can also potentially

provide an efficient and cost effective care alternative to disease management in these same regions.
Telemedicine is the delivery of health care from a distance. Live, interactive videoconferencing provides health professionals and patients at a rural site real-time access to a consultant at a tertiary care center. The consulting physician can listen to a patient's clinical history, talk with the patient and then utilize special medical tools to examine the patient remotely. These tools may include an electronic stethoscope, general examination camera, ophthalmoscope and otoscope. Other technologies such as PACS (picture archival communication system) make it possible for the specialist to immediately evaluate X-rays, CT and MRI images.

Hamot Medical Center initiated a pilot project with Kane Community Hospital in March 2005. The objective of this project was to determine whether or not telemedicine would provide the patient care advantages as surmised. The results have been rather surprising, although not completely unexpected. Patients for this program, as well as many others across the country, have expressed a high level of satisfaction with their care. This is especially true for those individuals who have to travel two to three hours for a specialty evaluation, incurring lost work time, transportation costs and costs associated with overnight accommodations.

This pilot project involved cardiology evaluation since it was a need identified by the Kane Community Hospital medical staff and a capital investment of nearly $150,000 for the equipment was made by Hamot Medical Center to fund it. Given the success of the telemedicine program, the patient's response, and the physicians desire to further improve access, a decision has been made to expand the current capabilities of the program. Other community hospitals, one of the Federal Correctional Institutes, as well as the staff from Prison Health Services – contracted to provide healthcare to the Pennsylvania State Correctional Institutes - have voiced a desire to have telemedicine available to them for certain specialties and disease management/prevention programs.

Expected Outcomes:

There are four main goals and objectives of this proposed network:

- ☐ To improve access to a broad range of nationally recognized medical specialty services and help provide standardization of care for patients. A significant amount of the medical care and services can be offered in the rural communities, saving patients time and money. It should also help reduce the governmental expense related to the Medical Assistance Transportation Program (MATP). According to the Governor's Executive Budget for the Fiscal Year 2007-2008, it is estimated that State funding will be increased by $8.315 million (from $56.287 million to $64.602 million) and Federal Medical Assistance-Transportation funding by $7.080 million (from $47.973 million to $55.053 million) to support the transportation program. Telemedicine could have a positive impact on these costs.

- ☐ To use telemedicine to encourage physicians, nurse, and allied health professionals to establish practices and services and remain in the rural communities. Telemedicine can provide increased collaboration and support by peers and improve access to quality continuing education opportunities. Telemedicine may also alleviate the financial burden on rural community hospitals having to recruit specialists to their facility.
- ☐ To increase public safety by evaluating and treating prison inmates within the confines of the correctional institutions. Telemedicine can be used as a utilization management or screening tool to assist with the requirements of standardized health care in the prison population. A telemedicine consult will decrease the need to transport inmates outside the prison walls and result in a substantial cost savings for the Department of Corrections.
- ☐ Promote the cooperation of smaller community hospitals to share services

The proposed telemedicine project will bring world-class cardiology, neurology, and cardiovascular surgical care to rural communities so that travel and time off from work may be minimized. Rather that having patients delay treatment or evaluation because they are unable or do not wish to travel, they may be seen in their own community and receive a more timely diagnosis and treatment. With telemedicine, the community hospitals may be able to stop the migration of many patients (and subsequently revenue) to the larger tertiary care facilities.

After the initial start-up with the core specialties, community hospitals and prison health systems will begin adding other specialty areas and disease management programs according to their needs. At the present time, a commitment has been received from the following specialty areas to participate in the telemedicine program: Cardiology, Cardiovascular surgery, Neurology, Intensive Care, Nephrology, Trauma/Emergency Room, and Neonatology/ Lactation Specialist.

In addition to specialty evaluation, disease management programs can also be addressed with telemedicine. Heart failure, a significant admission diagnosis, is a disease that cannot be cured but significant reductions in the disease progression can be made with close monitoring. A heart failure clinic can provide closely monitored patient care and highly customized adjustments in treatment and therapy can be made before the patient requires hospital care. Medicor Associates has established an outpatient heart failure clinic in the Erie, Pennsylvania office. Unfortunately, because of the distance that patients need to travel, many individuals residing in Elk, McKean, Warren, Potter and Cattaraugus counties are unable to participate. Through telemedicine, heart failure nurse practitioners at Medicor Associates can evaluate patients remotely with the assistance of a nurse practitioner or physician assistant at the rural facility and tailor a patient's treatment regimen accordingly.

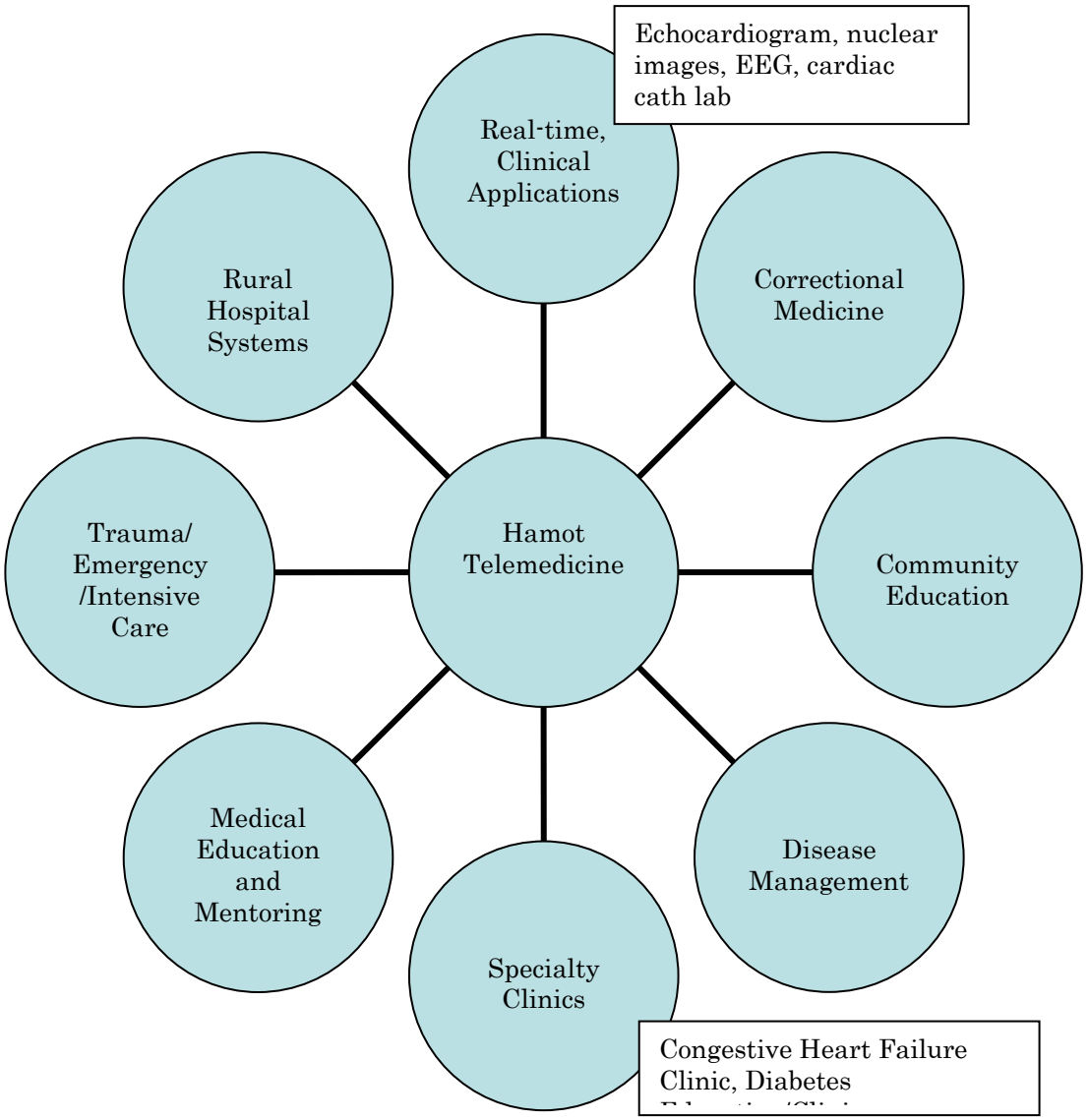
As is the case in many rural environments, it is often difficult to recruit and retain physicians and physician extenders. With the addition of telemedicine, these professionals will have the opportunity not only to communicate with specialists and

partake in specialty consults, but will also be able to participate in continuing medical education (CME) without closing their offices for extended periods of time. Currently, they have the ability to confer with specialists via the telephone about test results; with telemedicine, the rural health professional will be able to forward the actual images to the specialist for their review and interpretation. In this way, it is felt that these professionals will feel less isolated from their peers and more comfortable practicing in the rural Pennsylvania communities. If services can be offered via telemedicine, the rural hospitals may recognize a significant cost savings related to a reduced need to recruit certain specialists.

Telemedicine will allow specialists to consult with inmates and healthcare providers at the correctional institutions. The specialists can evaluate an inmate and guide the on-site health care. If it would be necessary to transport an inmate for more acute care, much of the pre-treatment evaluation and follow-up care can be provided via telemedicine; thus reducing the need for multiple trips out of the prison system.

The network design that has been chosen for the telemedicine project is not a point-to-point connection with a single entity. Instead, all facilities that choose to participate will be interconnected – meaning they can provide and receive services from each other if they so desire. For example, one community hospital has the ability to cover another in the absence or need for a certain specialty such as radiology. This may not only help to promote cooperation among the community hospitals but may also reduce the cost associated with a locum tenens. Some of the State Correctional Institutions do not have physician coverage. These facilities are too far for the rural physicians to provide care but the telemedicine link will enable them to evaluate inmates from their "home" facility.

The interconnectivity of this project is demonstrated in the pictorial below:



Each facility involved in the network will be capable of receiving and providing any services that they have to offer.

For-profit organizations will be responsible for purchasing or reimbursing Hamot Medical Center for the equipment necessary to perform telemedicine consultations. Of the for-profit organizations which have agreed to perform telemedicine, all presently have connectivity established with Hamot Medical Center; therefore, the telecommunication lines necessary for the telemedicine project will originate at Hamot Medical Center and be routed to each facility accordingly.

Hamot Medical Center committed $250,000 for the initial start-up of the telemedicine project. They have been responsible for the purchase of the videoconferencing systems, peripheral devices (EKG, stethoscope, and handheld camera), printers, monitors and

computers to operate the telemedicine project. They have also been responsible for the operational cost of the telecommunications network and ISDN lines. The cost of the telecommunications lines combined – for Hamot Medical Center – is $1451 per month. Kane Community Hospital applied for and was granted reimbursement from the Universal Service Fund. The original quote for their T-1 line was $1683. With reimbursement from the Universal Service Fund, Kane Community Hospital is responsible for approximately $314 per month.
Procedural revenue generated from referrals from the telemedicine project will help to offset these costs. For example, indirect revenue to Hamot Medical Center from cardiac procedures has been projected at approximately $107,308 for the first year and $139,319 for the second year. Regional hospitals will realize revenue from additional testing from the specialty evaluations and disease management programs. Laboratory tests, x-rays, EKGs, holter monitors, event monitors, EEGs, and CT/MRI scans may be ordered. The regional hospitals may also realize savings from less travel expenses and overnight accommodations associated with CME programs. The for-profit organizations will generate revenue from the consultations performed. This, in turn, will assist them in paying for additional equipment, updates, maintenance, etc.

ADDRESS, ZIP CODE, RURAL URBAN COMMUTING AREA(RUCA) CODES AND PHONE NUMBER FOR EACH HEALTH CARE FACILITY PARTICIPATING IN THE NETWORK

Bradford Regional Medical Center
116 Interstate Parkway
Bradford, Pennsylvania 16701
814-368-4143
RUCA: 4

Elk Regional Health Center
763 Johnsonburg Road
St Marys, Pennsylvania 15857-3498
814-788-8500
RUCA: 4

Kane Community Hospital
4372 Route 6
Kane, Pennsylvania 16735
814-837-8585
RUCA: 7

Pennsylvania State Correctional Institution- Albion
10745 Route 18
Albion, Pa 16475
814-756-5778
RUCA: 2

FCI McKean
PO Box 5000
Bradford, Pennsylvania 16701
814-362-8900
RUCA: 10

PREVIOUS EXPERIENCE IN DEVELOPING AND MANAGING TELEMEDICINE PROGRAMS

As stated previously, a pilot project was developed to investigate the practicality and efficacy of a telemedicine program. A consultant was hired to navigate through the initial planning stages of project. A steering committee which included administrative, finance department and information systems staff from both hospitals, nurses, office managers, as well as local and regional physicians met frequently to determine the direction of the telemedicine program. The Regional Director of the Hamot Heart Institute assumed the responsibility of the program manager since she was already a liaison between the community hospitals, Hamot Medical Center, and the cardiology group.

Education regarding telemedicine was gathered from personal phone conversations with program directors across the country. Resource manuals from the American Telemedicine Association, as well as attendance at their International Meeting and Trade Show, provided a wealth of information and guidance. Once a general understanding of the telemedicine process was gained, several site visits were conducted by members of the steering committee team to various facilities that had been in existence for many years. One of those facilities was the University of Virginia. Their administrative staff provided a great deal of direction regarding policies and procedures, equipment, organization and management of a telemedicine program.

Based upon information gathered at site visits and personal contacts, the steering committee invited prospective vendors to demonstrate their products. Demonstrations were held to allow physicians, nurses, nurse practitioners, physician assistants, and information systems staff the opportunity to trial the equipment and offer their opinions. Tandberg equipment was chosen for its ease of use, interconnectivity and also for the proximity of service locations. The vendor for the Tandberg equipment- Wireone Communications - offered 24/7/365 support with one phone call as part of their maintenance plan. Wireone Communications is capable of monitoring the Tandberg equipment remotely and providing advanced warning if the system is down for any reason. This type of support was of particular concern in the rural communities since they desired one central contact regarding the operation of the system and the communications link.

A networking company was hired to facilitate the implementation of the network and arrange the coordination of the telemedicine equipment and peripheral devices. This company provided guidance to the respective hospital information systems staff as the network evolved.

The project was coordinated by the Regional Director of the Heart Institute as she was instrumental in coordinating and orchestrating the launch of this telemedicine project – from conducting team meetings and writing the policies and procedures to the training of physicians and staff from both hospitals. Working closely with the Information Systems staff from both entities to appropriately place the equipment, a reference blueprint was drafted to better coordinate the aspects of program development. Telemedicine is not a new technology – many programs have been in existence since the 1990s – but it was a new initiative in the region of northwestern Pennsylvania. There was both a technology component to this endeavor as well as a human component. The technology component was fairly straightforward. It is continuously improving and becoming more user-friendly. The manufacturers of this equipment are more than willing to demonstrate their products and provide aftercare. Companies who specialize in creating the network infrastructure are also readily available and can provide support for the network in a 24/7/365 manner. The human component of the program was the most difficult. Once the telemedicine system was in place, she supported the regional staff through the initial consults until they established a comfort level with the equipment. From earning the "buy-in" of local and regional physicians to sharing the experience with patients and every possible scenario in between, the Regional Director set the tone for the telemedicine program and remains the resource person for administration, physicians and staff for any questions or suggestions regarding the telemedicine project.

PROJECT MANAGEMENT PLAN – LEADERSHIP, MANAGEMENT STRUCTURE, WORK PLAN, SCHEDULE, BUDGET/NETWORK COSTS PER YEAR

The project and leadership team:

Steering Committee Members:

J. Gary Rhodes	CEO, Kane Community Hospital
George Leonhardt	CEO, Bradford Regional Medical Center
Gregory Bauer	CEO, Elk Regional Health Center
John Malone	CEO, Hamot Medical Center
Gary Maras	Vice-President – Business Development
	Director, Hamot Heart Institute

Overall Project Management:

Hamot Medical Center/Medicor Associates/Northshore

Valarie Jackson	Project Manager
David Wilcox	Director, Information Systems
Mark Silvaggi	Information Systems
Bradley Dinger	Finance Dept., Hamot Medical Center
Carole Weber	Medicor Associates, Billing
Kris Bauer	Medicor Associates, Information Systems
Mary Beth Weiss	Site Coordinator
Dr. Charles Furr	Medicor Associates, Clinical Advisor
Aaron DeMatteis	Northshore Clinical Associates, Information Systems
Linda Offner	Northshore Clinical Associates, Operations Director
Dr. James DeMatteis	Northshore Clinical Associates, Clinical Advisor

<u>Kane Community Hospital</u>

Margaret Twidale	Information Systems
Pam Bray, RN	Nursing Supervisor
Cindy Salerno, RN	Emergency Room Coordinator
Dr.Emmanuele Hipolito	Clinical Advisor
Dale Rolls	Site Coordinator

<u>Elk Regional Health Center</u>

Mary Ann Schwabenbauer	Director of Information Technology
Pauline Skok, RN	Emergency Room Manager/Site Coordinator
Mary Parana, RN	Director of Nursing
Dr. Patankar	Director, Emergency Room

<u>Bradford Regional Medical Center</u>

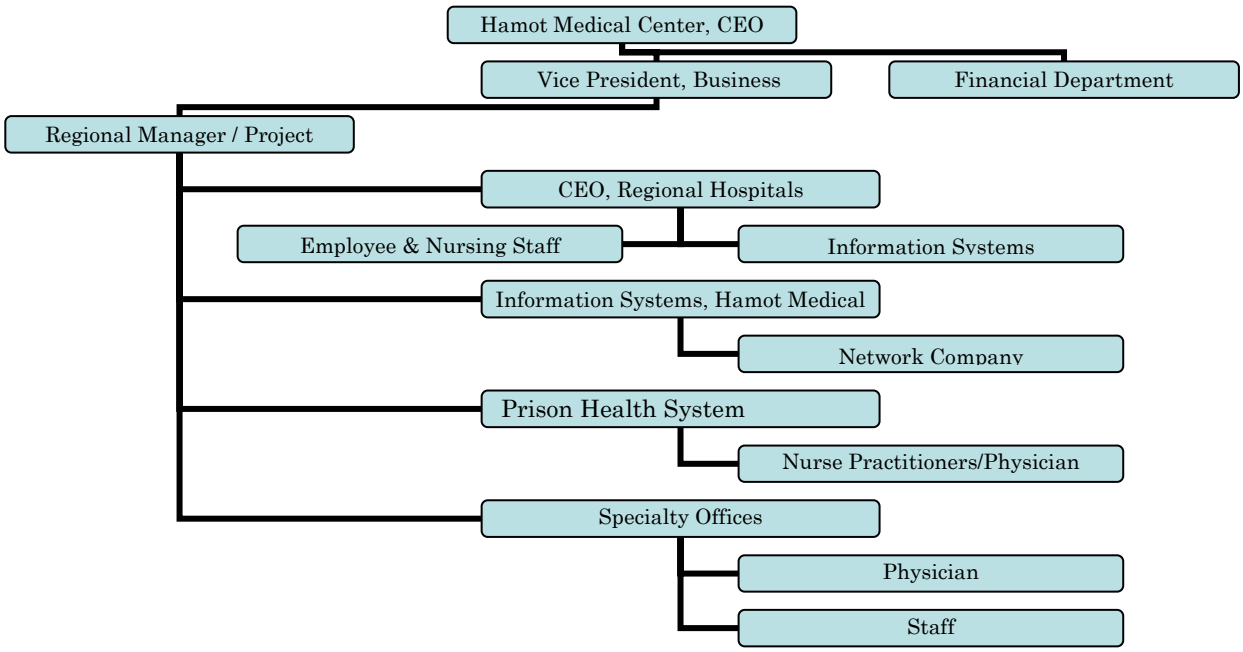
Terry Palmer	Director, Information Systems
Thomas Marsh	Information Systems
Tim Brown	Director, Radiology Services
Dr. Steven Herrmann	Clinical Advisor

<u>State Correctional Institute</u>

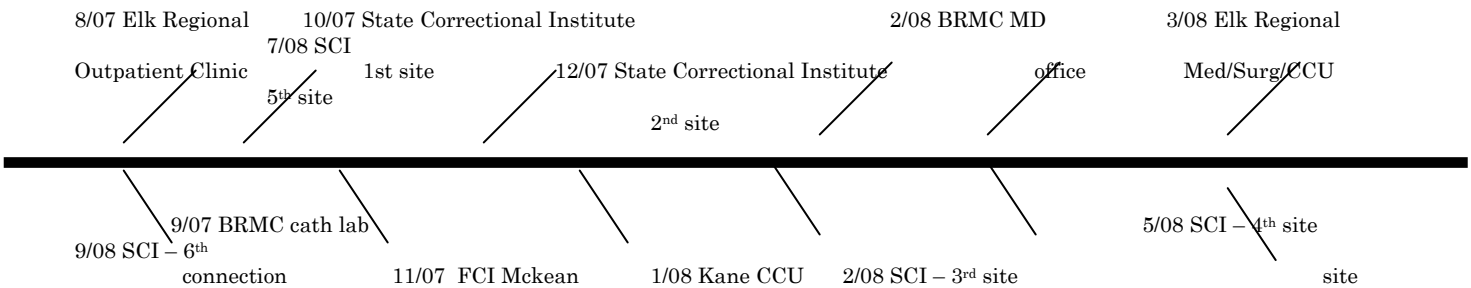
Thomas Considine, Jr	District 1 Administrator, Prison Health Services, Inc

Tracey Freeman	MIS Tech Specialist, Prison Health Services, Inc
Dr. Mark Baker	Physician, Prison Health Services, Inc
James Price	Administrator, Prison Health Services, Inc
Dana Seamen	Site Coordinator

MANAGEMENT STRUCTURE



PROJECTED IMPLEMENTATION SCHEDULE



Of note, additional sites of implementation are pending. There are several other rural facilities that have voiced a desire to have specialty clinics, which would be supplemented by a telemedicine capability.

WORK PLAN

The following work plan will be employed as a guide to assist in the development of the telemedicine service for each facility. It is meant to provide direction and will be modified according to the needs and desires of each respective facility.

Needs assessment (physicians, administration, nursing)	
Meet with regional staff regarding services requested	
Review request of service with Hamot Medical Center specialty	
Obtain approval of facility physicians/staff to proceed	1-2 months post needs assess.
Determine location of telemedicine office	
Determine necessary equipment	
Equipment demonstration, if necessary	2 weeks to schedule
Establish financial responsibilities, approve cost	
Apply for hospital privileges (physician/specialty)	1-2 months
Choose vendor for equipment	
Outline responsibilities for Hamot entities and Rural facility	
Obtain quotes for telecommunications line [rural facility]	
Submit Universal Service paperwork (form 465) [rural facility]	28 day waiting period
Order telecommunications line	30-90 days to install
Run necessary cabling, phone lines, etc	
Order telemedicine equipment	3-4 weeks from order date
Install telecommunication line	3 days
Install equipment and test line	1-2 days
Submit necessary Universal Service paperwork (form 467) [rural facility]	
Access provided to PACS at rural facility – tie to hospital network	Run concurrently with cabling
Staff training on equipment/peripheral devices	2 weeks
Review of policy and procedure for referral (office managers)	
Review one-call Wireone assistance process	
Scheduling through specialty office	
Times of evaluation established according to specialty and facility	
Reference manual compiled with equipment manuals, phone/fax numbers, troubleshooting guide, help desk process	
First consult performed	Goal: 5-6 months after needs assessment

BUDGET

Hamot Health Foundation
Telemedicine Program
FY 2007 Proforma

	Kane ER	Kane Clinic	FCI	Hamot	Bradford	SCI
Projected Patient Revenue						
Trauma Follow-up		4,800			4,800	
Lactation Specialist/NICU					2,400	
Cardiac Indirect Procedures (Caths, Interventic		22,650	15,649		33,534	16,845
Neurology Indirect Procedures						
Total Patient Revenue	-	22,650	15,649	-	35,934	16,845
Capital Equipment						
Clinical Equipment:						
Intern MXP		10,376.00				
770 MXP (camera portion)		7,545				
Tandberg 990MXP w/NPP				16,886	15,280	
Ophthalmoscope						31,500
Networking Equipment:						
Networking Equipment					2200	
Total Capital Equipment	-	17,921	-	16,886	17,480	31,500
Operating Expense						
Equipment:						
Stethoscope		2,995	2,995	2,995	2,995	8,985
EKG Machine (PC Based)		3,995	3,995		-	
Sanyo 23" TV		-		1,976	1,976	
Laptop		1,000			1,000	567
HP Office Jet 7300 All in One		500			500	
Sony Handycam		350			350	
Telecommunications:						
T1		5,100		10,212	4,800	
ISDN				8,600		
Maintenance:						
Intern MXP		1,300				
Tandberg MXP (camera portion)	1,300			1,168	1,168	
Regional Network Support		2,500	2,500	2,500	2,500	2,500
Gatekeeper & Scheduler Software Mnt				2,832		
Total Operating Expense	1,300	17,740	9,490	30,283	15,289	12,052
TOTAL EXPENSE	1,300	35,661	9,490	47,169	32,769	43,552

Hamot Health Foundation
Telemedicine Program
FY 2008 Proforma

	Kane ER	Kane Clinic	FCI	Hamot	Bradford	S
Projected Patient Revenue						
Trauma Follow-up		4,800			4,800	
Lactation Specialist/NICU		2,400			2,400	
Cardiac Indirect Procedures (Caths, Interventions, Surgeries)		19,630	20,460		33,210	23
Neurology Indirect Procedures		1,500	1,500			2
Total Patient Revenue	-	23,530	21,960	-	35,610	26
Capital Equipment						
Clinical Equipment:						
Intern MXP		10,376.00				
770 MXP (camera portion)		7,545			7,545	
Tandberg 990MXP w/NPP				16,886		
Ophthalmoscope		10,500	10,500			3
Networking Equipment:						
Networking Equipment					2200	
Total Capital Equipment	-	28,421	10,500	16,886	9,745	3
Operating Expense						
Equipment:						
Stethoscope		2,995			2,995	
EKG Machine (PC Based)		3,995			-	
Sanyo 23" TV		-			1,976	
Laptop		1,000			1,000	
HP Office Jet 7300 All in One		500			500	
Sony Handycam		350			350	
Telecommunications:						
T1		5,100		10,212	4,800	
ISDN				8,600		
Maintenance:						
Intern MXP		1,300				
Tandberg MXP (camera portion)	1,300			1,168	2,500	
Regional Network Support		2,500	2,500	2,500	2,500	
Gatekeeper & Scheduler Software Mnt				2,832		
Total Operating Expense	1,300	17,740	2,500	25,312	16,621	
TOTAL EXPENSE	1,300	46,161	13,000	42,198	26,366	

TELEMEDICINE COORDINATION THROUGHOUT STATE OR REGION

Management and scheduling software was purchased by Hamot Medical Center to assist in the scheduling of the telemedicine consultation. Twenty-five (25) licenses were purchased to provide the specialty offices, Hamot Medical Center departments, and regional hospitals with information regarding availability of the network. With the present network capabilities, three simultaneous telemedicine consultations may be conducted. The scheduling software will allow each facility with a license to access the telemedicine calendar and determine whether or not a time is available. In this way, the telecommunication line is not overloaded and the telemedicine consult has the appropriate bandwidth to adequately be conducted. Hamot Medical Center has recently upgraded its own network infrastructure and has made provisions for increased bandwidth when it is required.

Hamot Medical Center and the regional hospitals recognize that an investment in telemedicine may not initially generate adequate revenue to support the cost of the program. Hamot Medical Center has committed $250,000 of its own monies to start this project. Additional funding from a grant source would provide sufficient money to purchase the equipment and networking technology necessary to conduct the evaluations. A grant would allow the project to become well-established within the community hospitals, communities and prison systems. Thereafter, revenue generated from additional testing would help to offset the telecommunications and equipment costs.

The value of the equipment and telecommunication lines will be evident in other arenas other than for patient care and disease management. A rather unique network – an MPLS over peerless IP – has been established to connect Hamot Medical Center with the regional hospitals and correctional institutions. Within this network, there is not a point-to-point connection with a single entity. Instead, all facilities that choose to participate will be interconnected – meaning they can provide and receive services from each other. This could possibly result in cost savings for the hospital if coverage can be provided for specialty vacancies caused by illness or vacations.

CME and other educational programs will be transmitted to each facility on a regular basis. Presently, it is difficult for physicians and nursing staff to take time off to attend continuing medical education (CME) programs and the financial cost to the hospital may limit the number of individuals participating. Grand Rounds and "Lunch and Learn" programs are currently held weekly at Hamot Medical Center and may be offered via telemedicine to the rural facilities for educational credit.

One facility has a cardiac catheterization laboratory with no ability to transmit images for immediate review and opinion. The telemedicine equipment is one avenue to alleviate this problem. If the cardiologist performing the catheterization at the regional hospital requires an opinion about whether a patient needs intervention or surgery, he/she can review the study real-time with another cardiologist at Hamot Medical Center. This application improves patient care and reduces the professional isolation that may be experienced with a single practitioner at a rural hospital.

In summary, the vision of Hamot Medical Center is to provide superior patient care and service to the Erie community and the tri-state region achieving the highest national standards. Our mission, quite simply, is "to serve." The administration and physicians have reinforced the commitment to offer the most sophisticated care by initiating this telemedicine project. It is an extension of services that are currently provided in the Northwestern region of Pennsylvania and a testament of the care that is provided to the patients in that region and the relationships that exist with the regional physicians and health care facilities.
According to the Office of Health Equity (Pennsylvania Department of Health), nearly 1/3 of all Pennsylvania residents live in rural areas, yet only 13.5% of all Pennsylvania physicians practice there. This telemedicine initiative will support those physicians in these rural facilities and enable those same facilities to offer specialty care that would not otherwise be available. Each rural facility will determine their particular needs and will work with Hamot Medical Center to provide those services.